United States
Department of
Agriculture

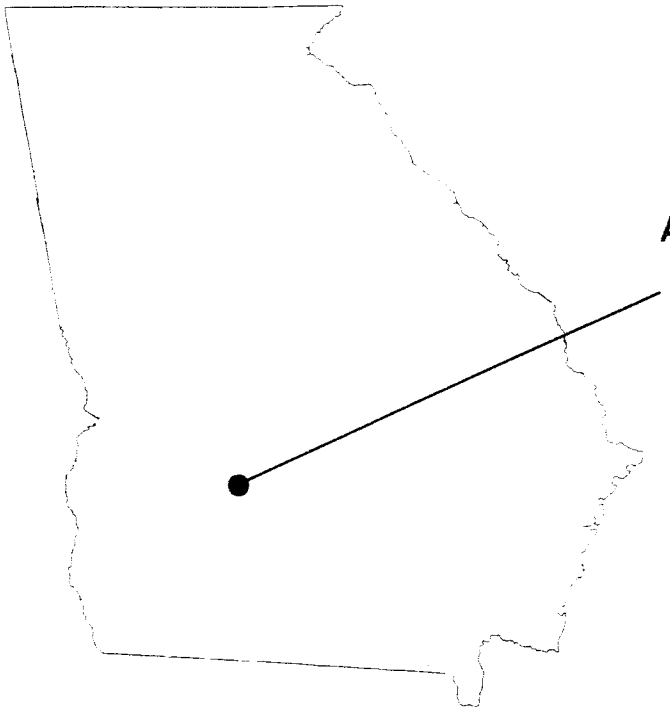
Natural
Resources
Conservation
Service

Americus,
Georgia

Annual Technical Report

Americus Plant Materials Center

1994



A Technical Summary of Plant Materials Projects
at the Americus Plant Materials Center

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AMERICUS PLANT MATERIALS CENTER
AMERICUS, GEORGIA

ANNUAL TECHNICAL REPORT
1994

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AMERICUS PLANT MATERIALS CENTER

INTRODUCTION

The Americus PMC was established in 1936 to produce planting materials, mainly pine seedlings, for use by the CCC Camps and the former SCS demonstration projects. The center contains seven soil types, with Orangeburg predominating on its 327.39 acres. Approximately two-thirds of the land is open for cultivation. Muckalee Creek runs through the southwest corner, furnishing water for irrigation. The center was operated on contract by the University of Georgia Experiment Station's from 1954 to 1975. The Soil Conservation Service operated the PMC from 1976-1994. In 1994 the PMC was transferred to the Natural Resources Conservation Service.

The real property holdings at the facility consist of 327.39 acres of land with 19 buildings, an underground irrigation system that covers about 85 acres, a water supply system, and sewage disposal system.

MISSION

The mission of the NRCS-PMC program is to assemble, test and release plant materials for conservation use; determine techniques for their successful use; provide for their commercial increase; and promote the use of plant materials needed to meet the objectives and priorities of the National Conservation Program.

DESCRIPTION OF THE AREA

The Americus PMC serves Alabama, Georgia, South Carolina, North Carolina, and parts of Tennessee and Florida. These states present a wide range of climatic and soil conditions.

Elevations range from sea level to over 6,000 feet. Low temperatures will vary from -20 F at the higher elevations to 10 F along the coast while summer high temperatures range from 70 F in the mountains to 110 F at lower elevations.

Frost free days vary from 260 days near the coast to 130 days at the higher elevations.

Annual rainfall over the area ranges from 45 to 80 inches.

The states served by the Center are represented by the eleven major land resource areas.

MAJOR LAND RESOURCE AREAS SERVED:

123 Nashville Basin
128 Southern Appalachian Ridges and Valleys
129 Sand Mountain
130 Blue Ridge
133A Southern Coastal Plain
134 Southern Mississippi Valley Silty Uplands
135 Alabama and Mississippi Blackland Prairies
136 Southern Piedmont
137 Carolina and Georgia Sandhill
152 Gulf Coast Flatwoods
153 Atlantic Coast Flatwoods

Soil Conditions vary widely -- deep droughty sand, heavy plastic clay subject to excessive intermittent wetness and drying, highly acid to alkaline extremes, and swamps and marshes - fresh and salt. Farming enterprises also vary widely. The area contains a number of heavily populated suburban areas surrounding centers of industry and commerce. The mountains, seashore, and other areas of natural beauty are being rapidly developed to meet the demand for recreation.

Such diversity of climate, soil, and enterprises requires many different types and kinds of vegetation to provide for protecting the land when it is properly treated for soil and water conservation.

COOPERATIVE AGREEMENTS

The PMC works cooperatively with the University of Georgia and Auburn University, and Fort Valley State College on several mutually beneficial projects. The plant materials program also works with the EPA, GA DNR, DOD, and other state and federal agencies.

The PMC works with the Georgia and Alabama Crop Improvement Associations in regards to foundation seed fields and seed processing facilities.

SUMMARY OF WEATHER CONDITIONS - AMERICUS, GEORGIA - 1994

	Temperature (°F)		Precipitation(Inches)		65 Yrs(1929-1994)	
Month	1994 Max.	1994 Min.	Mo. Total	65 Year Average	65 Year High Mo.	65 Year Low Mo.
January	73	12	3.40	4.42	11.19	.64
February	78	25	5.25	4.67	12.28	.75
March	85	32	4.55	5.39	12.11	.48
April	89	36	1.80	3.87	12.26	.00
May	90	42	2.30	3.40	8.35	.14
June	93	66	7.55	4.28	11.43	.03
July	93	65	24.79	5.39	24.79	1.25
August	93	62	4.55	4.05	11.76	.99
September	92	54	3.00	3.34	11.54	.10
October	88	42	6.13	2.11	9.60	.00
November	80	29	3.96	2.99	10.63	.05
December	74	29	3.18	4.18	12.29	.42
TOTAL			70.46	48.09		

The coldest day of the year was January 19. Last day of frost April 2nd. The hottest days of the year, June 5, July 20 and August 31st. First day of frost November 2nd. First killing frost, November 24th.

PROJECT 13A114R - DETERMINATION OF FORAGE QUALITY AND QUANTITY OF SELECTED INDIANGRASS

INTRODUCTION

Indiangrass (Sorghastrum nutans) is a native warm season perennial grass. It has been utilized in the Midwestern United States as a forage for many decades. However, no Southeastern United States cultivar is available. This project attempts to compare a composite of four southeastern ecotypes (Americus PMC) to several standard indiangrass cultivars.

MATERIALS AND METHODS

The test compared the Americus PMC cultivar to widely used indiangrass cultivars called 'Lometa' and 'Rumsey'. Pensacola bahiagrass was included in the test as a check.

The test was established at the Americus PMC in May 1990. All treatments were hand seeded at 10# PLS/AC to six replications in RCB design.

Plots were harvested in July and at heading. Dry matter production and percent ground coverage of each treatment were measure. IVDMD determination was conducted on some samples. Each spring and fall stem counts were recorded.

Similar tests were conducted in Athens, Georgia on low and high fertility sites by University of Georgia Professor Dr. Joe Bouton.

RESULTS AND DISCUSSION

The low fertility test at Athens indicates that the APMC cultivar produced significantly more dry matter (kg/ha) than Rumsey in (1989-1991). The APMC cultivar also produced a significantly higher IVDMD value than Rumsey in 1989-1990. The same data indicates that the APMC produced more dry matter than Lometa in 1989-1991 but not at a significant level. However, the APMC did produce a significantly higher IVDMD value than Lometa in 1989-1990. The low fertility site also indicates that the indiangrass entries, especially the APMC cultivar, increased dry matter production each year from 1989-1991. (Tables 3-7)

The high fertility test at Athens indicates that over two years (1990-1991) the July clipping of APMC cultivar produced significantly more yield (Kg/ha) than Rumsey. It also produced a higher yield than Lometa but not at a significant level. The clipping yield at heading shows that APMC produced significantly higher yield than Rumsey. However, Lometa produces significantly higher yield than APMC at heading. The total yield data (July and heading clippings) indicates that the APMC produces significantly more yield than Rumsey. The APMC entry produced a higher yield than Lometa also, but not at a significantly higher level. (Tables 8-10)

The Americus PMC test indicates in the July 1991 clip no significant difference between Lometa, Rumsey or APMC cultivars. This trend continues in the heading clip and the total D.M. yield production for 1991. (Table 11)

The Americus PMC test for 1992 indicates no significant difference between APMC, Rumsey and Lometa at the July clipping or the heading clipping. However, for the total D.M. yield, Lometa is significantly higher than Rumsey. (Table 12)

The 1993 data at Americus PMC was analyzed in several ways. Using Tukey's LSD (5%) for the individual clip at July, there was no significant difference between Lometa, Rumsey or APMC cultivars. Using Tukey's LSD (5%) for the individual clip at heading, there was no significant difference between Lometa and APMC and no significant difference between APMC and Rumsey. (Table 13) Using Tukey's LSD (5%) for the total D.M. production of July and heading, Lometa was significantly different than the other indiangrass. Also APMC cultivar was not significantly different than Rumsey. (Table 13)

Since no interaction of variety and harvest dates, using LSD (5%) for average of mean D.M. from July and heading clipping, at either clipping time Lometa is significantly different than APMC and Rumsey with no significant difference between APMC and Rumsey. (Table 14)

Using the more liberal LSD test, LSD (5%) for the individual clip at July, there was no significant difference between Lometa, Rumsey and APMC cultivar. (Table 13) Using LSD (5%) for the individual clip at heading, Lometa was

significantly different from APMC and Rumsey. Also APMC was significantly different than Rumsey. (Table 13) Using LSD (5%) for total D.M. production of July and heading, Lometa is significantly different than APMC and Rumsey. APMC and Rumsey are not significantly different. (Table 13)

Using LSD (5%) for total D.M. production during 1992 and 1993, since no interaction of variety X years, regardless of year, Lometa is significantly different from APMC and Rumsey with no significant difference between APMC and Rumsey. (Table 15)

Using LSD (5%) for total D.M. production during 1991, 1992 and 1993, since no interaction of variety x years, regardless of the year, APMC was not significantly different than Lometa. However, there is a difference between APMC and Rumsey and no significant difference between Lometa and Rumsey. (Table 16)

In conclusion, considering the whole three years test at Americus (1991, 1992 and 1993) for total D.M. production, APMC was not significantly different than Lometa. However, there was greater production for APMC cultivar compared to Rumsey on a per year basis.

Also, the Athens tests indicate APMC cultivar produces more yield than Rumsey.

TABLE 1 AMERICUS PMC STEM COUNT DATA (1990-1993)

Cultivar	Stem Count						Mean Stem Count	Stem Count 1' x 1'
APMC	19	55	44	20	39	19	33	
Pen. Bahia	50	45	60	45	55	45	50	9-13-90
Rumsey	19	40	12	19	15	2	18	
Lometa	52	42	46	39	48	24	42	
APMC	43	88	97	98	64	65	76	
Pen. Bahia	50	60	60	64	47	60	57	5/17/91
Rumsey	38	55	24	35	54	47	42	
Lometa	82	78	80	71	57	140	85	
APMC	39	54	46	25	79	69	52	
Pen. Bahia	121	78	138	96	105	121	110	9/30/91
Rumsey	38	81	80	56	61	51	61	
Lometa	45	78	81	73	77	20	62	
APMC	42	36	56	28	41	54	43	
Pen. Bahia	67	39	46	58	61	89	60	5/21/92
Rumsey	40	47	18	36	55	49	41	
Lometa	53	59	51	65	48	21	50	
APMC	24	29	30	28	36	49	33	
Pen. Bahia	51	59	38	62	38	66	52	10/6/92
Rumsey	25	27	15	22	50	21	27	
Lometa	28	30	27	41	46	32	34	
APMC	39	32	33	62	24	26	36	
Pen. Bahia	36	43	39	29	48	37	39	5/10/93
Rumsey	51	26	43	21	41	28	35	
Lometa	37	29	24	38	62	49	40	
APMC	40	40	36	52	19	24	35	
Pen. Bahia	67	46	40	66	47	46	52	9/15/93
Rumsey	53	28	39	26	32	30	35	
Lometa	46	40	22	40	74	69	49	

TABLE 2 AMERICUS PMC % GROUND COVERAGE DATA (1991-1993)

Cultivar	% Ground Coverage						Mean	
APMC	90	95	95	95	90	85	92	
Pen. Bahia	95	95	95	95	90	95	94	7/15/91
Rumsey	75	95	75	80	90	75	82	
Lometa	80	80	85	90	80	90	84	
APMC	70	60	70	50	80	70	67	
Pen. Bahia	75	80	80	75	80	80	78	9/30/91
Rumsey	50	45	45	45	70	50	51	
Lometa	65	75	80	75	85	45	71	
APMC	70	65	70	65	80	70	70	
Pen. Bahia	70	70	75	75	75	80	74	7/15/92
Rumsey	60	60	60	60	70	60	62	
Lometa	75	70	80	70	85	70	75	
APMC	45	50	60	60	55	45	53	
Pen. Bahia	75	75	80	80	75	85	78	9/17/92
Rumsey	45	45	45	45	50	40	45	
Lometa	70	70	75	80	75	60	72	
APMC	75	65	70	70	55	65	67	
Pen. Bahia	60	80	50	80	70	75	69	7/14/93
Rumsey	75	75	45	60	60	65	63	
Lometa	70	85	70	80	80	80	77	
APMC	70	65	75	60	40	55	61	
Pen. Bahia	80	85	75	85	75	75	79	9/15/93
Rumsey	70	55	35	45	45	50	50	
Lometa	80	85	80	80	80	75	80	

Summary and analysis of data (1989-1993) taken from Athens and Americus, Georgia for forage yield and quality determination.

TABLE 3 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1989)

Cultivar	Mean D.M. Yield(Kg/Ha)	Mean IVDMD Value
APMC	1110	479.66
Pen. Bahia	364.5	502.96
Rumsey	276.66	435.08
Lometa	911.66	475.36
LSD (5%)	297.5	31.1

TABLE 4 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING
ATHENS, GEORGIA TEST (1990)

Cultivar	Mean D.M. Yield(Kg/Ha)	Mean IVDMD Value
APMC	4599.66	522.26
Pen. Bahia	2025.16	442.15
Rumsey	3351.83	414.73
Lometa	4143.66	440.55
LSD (5%)	1104.5	46.2

TABLE 5 LOW FERTILITY SITE YIELD DATA TAKEN AT HEADING
ATHENS, GEORGIA TEST (1991)

Cultivar	Mean D.M. Yield(Kg/Ha)
APMC	5471.5
Pen. Bahia	2636.83
Rumsey	3585
Lometa	4677.33
LSD (5%)	1032.9

TABLE 6 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING
ATHENS, GEORGIA TEST (1989-1990)

Cultivar	Mean D.M. Yield(Kg/Ha)	Mean IVDMD Value
APMC	2854.83	500.96
Pen. Bahia	1194.83	472.55
Rumsey	1814.25	424.90
Lometa	2527.66	457.95
LSD (5%)	548.1	26.7

TABLE 7 LOW FERTILITY SITE YIELD DATA TAKEN AT HEADING
ATHENS, GEORGIA TEST (1989-1991)

Cultivar	Mean D.M. Yield(Kg/Ha)
APMC	3727.05
Pen. Bahia	1675.50
Rumsey	2404.50
Lometa	3244.22
LSD (5%)	1005.9

TABLE 8 HIGH FERTILITY SITE YIELD & IVDMD DATA
ATHENS, GEORGIA TEST (1990)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken in July	Mean IVDMD Value From July Clipping
APMC	3217.00	499.78
Pen. Bahia	2220.66	519.10
Rumsey	1750.66	550.25
Lometa	2574.33	469.93
LSD (5%)	865.1	48.2

	Mean D.M. Yield(Kg/Ha) Taken at Heading	Mean IVDMD Value From Heading Clipping
APMC	3905.83	468.81
Pen. Bahia	2658.33	528.35
Rumsey	2583.83	511.06
Lometa	4748.50	464.30
LSD (5%)	1117.3	39.4

	Total Mean D.M. Yield(Kg/Ha) From July and Heading Clipping
APMC	7122.83
Pen. Bahia	4879.00
Rumsey	4334.50
Lometa	7322.83
LSD (5%)	1660.2

TABLE 9 HIGH FERTILITY SITE YIELD DATA
ATHENS, GEORGIA TEST (1991)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken in July
APMC	8929.16
Pen. Bahia	4157.50
Rumsey	5218.83
Lometa	7374.16
LSD (5%)	2097.3

	Mean D.M. Yield(Kg/Ha) Taken at Heading
APMC	3206.66
Pen. Bahia	2678.33
Rumsey	2328.50
Lometa	3791.83
LSD (5%)	828.9

TABLE 9 (Continued)

	Total Mean D.M. Yield(Kg/Ha) from July and Heading Clipping
APMC	12,135.83
Pen. Bahia	6,836.33
Rumsey	7,547.33
Lometa	11,166.00
LSD (5%)	2,652.7

TABLE 10 HIGH FERTILITY SITE YIELD DATA ATHENS, GEORGIA TEST (1990-1991)

Cultivar	Mean D.M.Yield(Kg/Ha) Taken in July
APMC	6073.08
Pen. Bahia	3189.08
Rumsey	3484.75
Lometa	4974.25
LSD (5%)	2373.8

	Mean D.M. Yield(Kg/Ha) Taken at Heading
APMC	3556.25
Pen. Bahia	2668.58
Rumsey	2456.16
Lometa	4270.16
LSD (5%)	666.5

	Total Mean D.M. Yield(Kg/Ha) from July and Heading Clipping
APMC	9,629.33
Pen. Bahia	5,857.66
Rumsey	5,940.91
Lometa	9,244.41
LSD (5%)	1,499.4

TABLE 11 AMERICUS PMC YIELD DATA TEST (1991)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken in July
APMC	4233.33a
Pen. Bahia	2040.00b
Rumsey	2936.66 ab
Lometa	3476.66ab
LSD (5%)	1583.5

TABLE 11 (Continued)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken at Heading
APMC	1516.66
Pen. Bahia	1683.33
Rumsey	1136.66
Lometa	1320.00
LSD (5%)	411.9

Cultivar	Total Mean D.M. Yield(Kg/Ha) from July & Heading Clipping
APMC	5750.00
Pen. Bahia	3723.33
Rumsey	4073.33
Lometa	4796.66
LSD (5%)	N.S.

TABLE 12 AMERICUS PMC YIELD DATA TEST (1992)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken in July
APMC	926.67a
Pen. Bahia	406.67b
Rumsey	916.67a
Lometa	1236.67a
LSD (5%)	355

Cultivar	Mean D.M. Yield(Kg/Ha) Taken at Heading
APMC	690.00
Pen. Bahia	593.33
Rumsey	425.00
Lometa	663.33
LSD (5%)	N.S.

Cultivar	Total Mean D.M. Yield(Kg/Ha) from July & Heading Clipping
APMC	1616.67ab
Pen. Bahia	1000.00c
Rumsey	1341.67bc
Lometa	1900.00a
LSD (5%)	473

TABLE 13 AMERICUS PMC YIELD DATA TEST (1993)

Cultivar	Mean D.M. Yield(Kg/Ha) Taken in July
APMC	640
Pen. Bahia	297
Rumsey	660
Lometa	827
Tukey's LSD 5%	302.52
LSD (5%)	223.67

Cultivar	Mean D.M. Yield(KHa) Taken at Heading
APMC	560
Pen. Bahia	517
Rumsey	387
Lometa	760
Tukey's LSD 5%	202.98
LSD (5%)	150.06

Cultivar	Mean D.M. Total Yield(Kg/Ha) from July & Heading Clipping
APMC	1200
Pen. Bahia	813.33
Rumsey	1046.67
Lometa	1586.66
Tukey's LSD 5%	378.84
LSD (5%)	280.1

TABLE 14 AMERICUS PMC YIELD DATA TEST (1993)

Cultivar	Average of the Mean D.M.(Kg/Ha) from July & Heading Clipping
APMC	600b
Pen. Bahia	407c
Rumsey	523.5bc
Lometa	793.5a
LSD(5%)	140

TABLE 15 AMERICUS PMC YIELD DATA TEST (1992 & 1993)

Cultivar	Mean D.M. Total Yield(Kg/Ha) Per Year for 1992 & 1993
APMC	1408.33b
Pen. Bahia	906.67c
Rumsey	1194.17bc
Lometa	1743.33a
LSD(5%)	309.34

TABLE 16 AMERICUS PMC YIELD DATA TEST (1991, 1992 & 1993)

Cultivar	Mean D.M. Total Yield(Kg/Ha) Per Year for 1991, 1992 & 1993
APMC	2855.5a
Pen. Bahia	1845.54c
Rumsey	2153.88bc
Lometa	2761.11ab
LSD(5%)	635.02

PROJECT 13I128R - ASSEMBLY AND EVALUATION OF BIG BLUESTEM ANDROPOGON GERARDI

INTRODUCTION

Big Bluestem (Andropogon gerardi) is a perennial, warm season grass. It is cross-pollinated and has several ploidy levels X = 20, 40, 60. Big bluestem is photoperiod sensitive. It is widely distributed in the United States. It occurs in tall grass prairies of the midwest as well as in forested areas of the southeast. It has been utilized for forage and hay production.

MATERIALS AND METHODS

In 1989/1990 the Americus PMC assembled 750 vegetative ecotypes of southeastern big bluestems. These ecotypes were placed into an initial evaluation block. Each entry was planted to 10 foot rows with one foot between clones. All entries were separated by three foot middles. Each entry was replicated twice.

In 1990/1991 the evaluation process began. The following were the evaluation criteria: 1) vigor, 2) stem color, 3) inflorescence color, 4) foliage amount, 5) foliage height (cm), 6) foliage color, 7) forage potential, 8) disease/insect resistance, 9) boot date, bloom date, maturity date, percent germ, 10) seed amount, 11) uniformity, 12) leaves height on stem, 13) total height, 14) stem size, 15) tillering, 16) steminess, 17) basal foliage, 18) lodging, 19) late maturity.

In spring 1992, Dr. Edzard van Santen (Auburn University) began a cooperative big bluestem study with the Americus PMC. The following criteria were added to the existing evaluation process: percent stand, forage mass, greening up date, biomass at flowering (green weight and dry weight), surface area of plot, and morphological data.

In June 1993, four pairs of cow/calf units were allowed to graze the big bluestem area. Cattle were removed and Dr. van Santen evaluated the preference of cattle for specific ecotypes. After regrowth, cattle were again allowed to graze the vegetation down to 8" stubble residues.

Dr. van Santen's data was processed and helped determine which ecotypes should be selected for crossing blocks in 1994. These blocks should produce germplasm for comparison

testing against a standard big bluestem cultivar. The first (3) blocks consisted of early maturing ecotypes, late maturing ecotypes and medium maturing ecotypes (biomass selections):

Early maturing crossing block
Lines - 23, 52, 54, 62, 71, 78, 81, 84, 94, 97, 140, 142, 161, 231, 260, 305, 322, 336, 351, 368, 481, 484, 542, 561, 578, 595, 624, 661, 676, 704, 719

Late maturing crossing block
Lines - 4, 14, 32, 42, 46, 48, 50, 58, 59, 66, 73, 76, 98, 99, 106, 107, 122, 123, 124, 126, 127, 130, 131, 134, 143, 366, 399, 406, 692

Medium maturing crossing block
Lines - 1, 7, 10, 18, 20, 38, 44, 57, 61, 69, 75, 77, 85, 88, 89, 91, 93, 111, 116, 159, 200, 204, 223, 373, 432, 438, 452, 496, 497, 513, 532, 560, 580, 592, 598, 627, 689, 691, 709, 738

Each line was represented by three replications per crossing block to ensure proper pollination.

PROJECT 13I131R - ASSEMBLY AND EVALUATION OF SWITCHGRASS *PANICUM VIRGATUM*

INTRODUCTION:

Switchgrass (*Panicum virgatum*) is a perennial, warm season grass. It is cross-pollinated and has several ploidy levels X = 18, 36, 54, 72, 90 and 108. Switchgrass is photoperiod sensitive. It is widely distributed in the United States. It occurs in tall grass prairies of the midwest as well as in forested areas of the southeast. It has been utilized for forage and hay production.

MATERIALS AND METHODS:

In 1990-1992 the Americus PMC assembled 1098 vegetative ecotypes of southeastern switchgrass. These ecotypes were placed into an initial evaluation block. Each entry was planted to 13 foot rows with three plants per row. All entries were separated by three foot middles. Each entry was replicated twice.

In 1993 the evaluation process began. The following are the evaluation criteria: 1) greenup date, 2) forage mass, 3) vigor, 4) stand, 5) leafiness, 6) disease/insect resistance, 7) foliage height, 8) stem size, 9) boot date, 10) leaf texture, 11) leaf size, 12) leaf/stem ratio (steminess), 13) bloom date, 14) foliage color, 15) maturity date and 16) seed amount.

In 1994 we emphasized regrowth, height, blooming, maturity and seed collection. Also a greenhouse compatibility study was conducted to help determine crossing compatibility of lines with like and unlike morphological characteristics. This data will help determine the composition of future crossing blocks for cultivar germplasm production.

PROJECT 13A136M - DEVELOPMENT AND COMPARATIVE TESTING OF EARLY BLOOMING CRIMSON CLOVER CULTIVAR FOR CONSERVATION TILLAGE USE

INTRODUCTION

Crimson clover (Trifolium incarnatum L.) is a cool season annual legume. It is naturalized to the United States from Europe. It has been utilized extensively as a forage and cover crop. It is cross pollinated primarily by bees (non-ploidy).

MATERIALS AND METHODS:

This project will compare experimental lines Cycle 1, Cycle 2 and Cycle 3 (developed by Americus PMC and Auburn University) to Robin, Tibbee and other common southeastern crimson clovers. The project will evaluate dry matter production at various dates including bloom date. It will also compare cultivar bloom dates. The tests will follow a RCB design with four replications. The tests were conducted at five Alabama Agricultural Experiment Station sites and the Americus PMC.

RESULTS AND DISCUSSION:

In 1993 at the Americus PMC site, D.M. production test during first week of March indicates Cycle 3, Cycle 2, Dixie and Cycle 1 were not significantly different for D.M. production. However, Cycle 3 did produce more D.M. than Robin. (Table 1)

In 1994 at the Americus PMC site, D.M. production during flowering date indicates Dixie, Tibbee, and Chief were not significantly different. The early bloomers all produced less D.M. (Cycle 1, Cycle 2, Cycle 3, Robin). (Table 2)

In 1994 at the Americus site all three experimental lines bloomed significantly earlier than other lines including Robin. (Table 3)

In 1994 at Americus site there were no significant differences among lines for D.M. harvest first week of March. (Table 4)

In 1994 at Americus site, D.M. production resulting from regrowth showed no significant differences due to cultivar at February 22 and April 21 clipping. The regrowth test shows no real trend for cultivar D.M. production. (Table 5)

In 1994/1995 the project will continue at Americus PMC and at the Alabama Agricultural Experiment Stations.

TABLE 1 AMERICUS PMC YIELD DATA (1993)

Cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Dixie	230.4 abc
Tibbee	191.6 bcd
Chief	168.71cd
Cycle 2	321.08ab
Cycle 3	359.88a
KY C-1	62.99d
Robin	206.21bc
Cycle 1	289.04abc
Tukey's LSD(5%)	137.69

TABLE 2 AMERICUS PMC YIELD DATA (1994)

Cultivar	Mean D.M. Yield (#/Ac) at Flowering Date
Dixie	4959.5 a
Tibbee	3798.2 abc
Cycle 1	2529.21cd
Cycle 2	2761.2 bcd
Chief	3940.1 ab
Flame	3642.9 bcd
Cycle 3	2386.3 d
Robin	3641.9 bcd
Tukey's LSD(5%)	1279.4

TABLE 3 AMERICUS PMC BLOOM DATE DATA (1994)

Cultivar	Mean Days to Bloom from March 1st
Dixie	33.75c
Tibbee	32.5 c
Cycle 1	13 a
Cycle 2	13 a
Chief	32.5 c
Flame	30 c
Cycle 3	13 a
Robin	22 b
Tukey's LSD(5%)	3.82

TABLE 4 AMERICUS PMC YIELD DATA (1994)

Cultivar	Mean D.M. Yield (#/Ac) 1st Week of March
Dixie	727.6
Tibbee	669.4
Cycle 1	604.9
Cycle 2	673.4
Chief	649.2
Flame	746.5
Cycle 3	654.8
Robin	682.3
Tukey's LSD(5%)	N.S.

TABLE 5 AMERICUS PMC YIELD DATA (1994) YIELDS RESULTING FROM REGROWTH CLIPS

Cultivar	Mean D.M. Yield (#/Ac) Feb 22
Dixie	416.3
Tibbee	528.1
Cycle 1	423.1
Cycle 2	501.7
Chief	422.6
Flame	245.8
Cycle 3	363.3
Robin	282.3
Tukey's LSD(5%)	N.S.

Cultivar	Mean D.M. Yield (#/Ac) Mar 23
Dixie	1219.1a
Tibbee	844.1ab
Cycle 1	512.6b
Cycle 2	514.2b
Chief	966.6ab
Flame	918.6ab
Cycle 3	441.9b
Robin	887.5ab
Tukey's LSD(5%)	628.2

Cultivar	Mean D.M. Yield (#/Ac) Apr 21
Dixie	1127.2
Tibbee	1261.6
Cycle 1	1276.9
Cycle 2	1266.2
Chief	1273.3
Flame	1569.3
Cycle 3	1343.5
Robin	1057.2
Tukey's LSD(5%)	N.S.

PROJECT 13A140S - EVALUATION AND SELECTION OF PLANT MATERIALS FOR FOREST BUFFERS IN THE SOUTHEASTERN UNITED STATES

INTRODUCTION:

This test will consist of the following species: ogeechee lime, red maple, blackgum, green ash, cheery bark oak, loblolly pine, yellow poplar, bald cypress, water oak, sweetgum, white oak and sycamore.

MATERIALS AND METHODS:

Plantings were established by use of dibbles in the winter 1993/1994. One 54′ x 100′ block per species was planted on 6′ spacings. Each block runs perpendicular to the slope. Each block was planted with 160 trees.

RESULTS AND DISCUSSION:

Percent survival of loblolly pine, yellow poplar and sycamore was below acceptable evaluation limits. Yellow poplar and sycamore need to be re-established. Other tree species are of acceptable percent stands. (Table 1)

Data contained in Tables 2 and 3 will provide base line data for measuring and comparing growth rate.

TABLE 1 % SURVIVAL OF FOREST BUFFER TREES TAKEN AUGUST 1994

Tree Species	Mean % Survival
Loblolly pine	21
Yellow poplar	14
Sycamore	18
Blackgum	84
Cherrybark oak	91
Sweetgum	77
White oak	66
Bald cypress	81
Green ash	81
Red maple	88
Ogeechee lime	38
Water oak	75

TABLE 2 TRUNK DIAMETER AND CROWN WIDTH OF FOREST BUFFER TREES - AUGUST 1994

Tree Species	Mean Dia. Main Trunk (mm) (at Ground Level)
Blackgum	7.232
Cherrybark oak	5.61
Sweetgum	10.54
White oak	6.73
Bald cypress	8.06
Green ash	25.49
Red maple	8.19
Ogeechee lime	16.57
Water oak	9.23

Tree Species	Mean Crown Width (cm)
Blackgum	22.13
Cherrybark oak	25.59
Sweetgum	27.3
White oak	24.78
Bald cypress	17.99
Green ash	65.83
Red maple	20.72
Ogeechee lime	40.10
Water oak	33.2

TABLE 3 HEIGHT OF FOREST BUFFER TREES - AUGUST 1994

Tree Species	Mean Height in (cm)
Blackgum	56.7
Cherrybark oak	56.73
Sweetgum	61.54
White oak	38.94
Bald cypress	57.36
Green ash	169.98
Red maple	56.18
Ogeechee lime	84.15
Water oak	60.26

PROJECT 13A142R - HAY AND GRAZING MANAGEMENT OF EASTERN GAMAGRASS

INTRODUCTION:

Eastern gamagrass (Tripsacum dactyloides) is a native perennial warm season bunch-grass. It is widely distributed in the United States. It occurs in most states east of the Mississippi River. It can be utilized for forage and hay production. It is a monoecious grass with morphology similar to maize. The diploid plants reproduce sexually. However, the tetraploids are faculative apomicts and the hexaploid plants are obligate apomicts. The mechanism for apomixis is displospory followed by pseudogamy. A gynomonoecious sex form with the potential of increased seed production has been identified. Gamagrass root stalk is a proliteration of tillers.

This project attempts to define management criteria for the production of Eastern gamagrass forage.

MATERIALS AND METHODS:

In April 1993, cold stratified 'Pete' Eastern gamagrass seed was planted to five acres on the southern end of the Americus PMC. A two row corn planter set on 36" rows was used to plant approximately four seed per linear foot of row. Seed was planted 1 1/2 inches deep. Six hundred pounds of 0-14-14 fertilizer was applied at planting and 75 pounds of N per acre was applied in June. Weeds were primarily controlled by cultivation.

The center suffered a severe drought in summer 1993, however, the field produced an excellent stand of Eastern gamagrass.

In 1994 the gamagrass grew and covered the pasture area with lush growth. Plans are to begin rotational grazing in 1995 with grazing lands initiative partnerships.

PROJECT 13A144R - HAY AND GRAZING MANAGEMENT OF YELLOW INDIANGRASS (SORGHASTRUM NUTANS)

INTRODUCTION:

Yellow indiangrass (Sorghastrum nutans) is a native perennial warm season grass. It can be utilized for forage and hay production. This test attempts to demonstrate the use of an Americus PMC cultivar (APMC) known as PI-514673. Emphasis will be placed upon establishment and management techniques for forage production.

MATERIALS AND METHODS:

In fall 1993 a three acre bahia grass pasture was sprayed with Roundup. In February 1994 the pasture was disced. March 1994 450#/Ac of 0-14-14 fertilizer was applied. On May 5, 1994 pasture area was disced and cultipacked to firm seedbed. Then the indiangrass seed was applied with a Solo fertilizer spreader set on No. 24 for a 12-14 foot swath. The rate of seeding was 25#/Ac or 10# pls/Ac. Area was then cultipacked perpendicular to original cultipacking for proper seed covering. In June 1994 broadleaf weeds were sprayed with 2-4-D at a rate of 1 qt/Ac. A good stand of indiangrass was observed during the summer of 1994.

In future years, rotational grazing techniques are planned for implementation.

RELEASE OF NEW CULTIVARS IN 1993

NAME	USE
'Doncorae' brunswickgrass *Paspalum nicorae*	Grassed waterways & filter strips
'Sumter Orange' daylily *Hemerocallis fulva*	Beautification
'Wetlander' giant cutgrass *Zizaniopsis miliacea*	Constructed wetlands
'Restorer' giant bulrush *Scirpus californicus*	Constructed wetlands
'Americus' hairy vetch *Vicia villosa* (cooperative with UGA)	Conservation tillage

RELEASE OF NEW CULTIVARS IN 1994

NAME	USE
'AU Early Cover' hairy vetch *Vicia villosa* (cooperative with Auburn Univ)	Conservation tillage
'AU Ground Cover' caley pea *Lathyrus hirsutus* (cooperative with Auburn Univ)	Conservation tillage
'Sharp' marshay cordgrass *Spartina patens* (cooperative with Brooksville PMC)	Coastal stabilization

SEED AND PLANT PRODUCTION IN 1994

SEED

NAME	POUNDS
'Amquail' bush lespedeza	100
'Doncorae' brunswickgrass	20
'Dove' proso millet	1500
'Americus' hairy vetch	685
'AU Ground Cover' caley pea	33
'AU Early Cover' hairy vetch	550
Crimson clover	6.25

PLANTS

NAME	EACH
Ogeche lime	420
'Flageo' marshhay cordgrass	100,000
'Sharp' marshhay cordgrass	5,000
Vetivera grass	6,000
Giant reed	10,000
'Big O' crabapple	440
'Sumter Orange' daylily	2,500
'Wetlander' giant cutgrass	100
'Restorer' giant bulrush	300
'Ellagood' autumnolive	845
'Bankers' willow	4,322

SEED AND VEGETATIVE STOCK PRODUCERS

CROP	PRODUCER
Trifolium vesiculosum 'Amclo' Arrowleaf Clover	Georgia Crop Improvement Assoc 2425 S Milledge Ave Athens GA 30605
Lespedeza virgata 'Ambro' Virgata Lespedeza	Georgia Crop Improvement Assoc 2425 S Milledge Ave Athens GA 30605
Paspalum notatum 'Pensacola' Bahiagrass	Georgia Crop Improvement Assoc 2425 S Milledge Ave Athens GA 30605
Panicum miliaceum 'Dove' Proso Millet	Georgia Crop Improvement Assoc 2425 S Milledge Ave Athens GA 30605
Elaeagnus umbellata 'Ellagood' Autumn Olive	McCorkle Nursery Rt 1 Dearing GA 30808 Hamilton Nursery Othello Hamilton P O Box 871 Thomson GA 30824
Hemerocallis fulva 'Sumter Orange' Daylily	Hamilton Nursery Othello Hamilton P O Box 871 Thomson GA 30824
Lespedeza thunbergii 'Amquail' Thunberg Lesp.	Julian Brown 126 Court St P O Box 8 Monrow GA 30655 Alabama Crop Improv. Assoc. S Donahue Dr Auburn Univ AL 36849 Adams-Briscoe Seed Co P O Box 18 Jackson GA 30733 Lambert Seed & Supply Hwy 28 W P O Box 128 Camden AL 36726

Lespedeza thunbergii (Continued)	Morgan Dunn Rt 5 Box 105 Troy AL
	Edwin Hammond Rt 2 Box 270 Reform AL 35481
	Ronnie Forbis Rt 1 Box 666 Mt Crogham SC 29727
	P.K. & Allen Newton Rt 4 Box 198 Sylvania GA 30467
Spartina patens 'Flageo' Marshhay Cordgrass	Americus Plant Materials Center 295 Morris Dr Americus GA 31709
	Dr Mark Latimore School of Agriculture Fort Valley State College Fort Valley GA 31030
	William Smith Rt 2 Box 94A Wigham GA 31719
Spartina patens 'Sharp' Marshhay Cordgrass	Americus Plant Materials Center 295 Morris Dr Americus GA 31709
	Brooksville Plant Materials Ctr 14119 Broad St Brooksville FL 34601
Scirpus californicus 'Restorer' Giant Bulrush	Varn Companies P O Box 4488 Jacksonville FL 32201
	Flowerwood Nursery Inc 6470 Dauphin Island Parkway Mobile AL 36605
Zizaniopsis miliacea 'Wetlander' Giant Cutgrass	Varn Companies P O Box 4488 Jacksonville FL 32201
	Flowerwood Nursery Inc 6470 Dauphin Island Parkway Mobile AL 36605

Festuca arundinicea 'GA-5' Tall Fescue	Pennington Seed Co. Madison, GA

LIST OF PUBLICATIONS IN 1993 AND 1994 - AMERICUS PLANT MATERIALS CENTER AND COOPERATORS

"Yield and Persistence of Tall Fescue in the Southeastern Coastal Plain after Removal of its Endophyte". Agronomy Journal 85: 52-55 (1993). J.H. Bouton, R.N. Gates, D.P. Belesky and M. Owsley.

"Reaction of Three Cool-Season Annual Legume Species to Meloidogyne Arenaria and Heterodera Glycines". Nematropica Vol. 23, No. 1, 1993. J.A. Mosjidis, Rodrigo Rodriquez-Kabana and Charles M. Owsley.

"Registration of 'Georgia -5' Tall Fescue". Crop Science 33: 1405 (1993). J.H. Bouton, R.N. Gates, G.M. Hill, M. Owsley, and D.T. Wood.

Research on Special Purpose Legumes. J.A. Mosjidis. 1994.

"Cover Crops to Watch". Progressive Farmer. Jan 1994, pp 36-37.

"An Early Developing Hairy Vetch for Cover Crop Use". SCS Technical Note. Sep. 94. No. 19. C.M. Owsley, M. Kirkland, S. Roach.

"New Cool Season Annual Legume for Use in Conservation Tillage". SCS Technical Note. Sep. 94. No. 20. C.M. Owsley, M. Kirkland, S. Roach.

1993 Annual Technical Report - PMC Staff.

1992/1993 Annual Report - PMC Staff.